

**OCCUPATIONAL SAFETY  
AND HEALTH STANDARDS BOARD**

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**PROPOSED PETITION DECISION OF THE  
OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD  
(PETITION FILE NO. 495)**

**INTRODUCTION**

The Occupational Safety and Health Standards Board (Board) received a petition on May 30, 2007, from Mr. Richard D. Grossman, P.E. (Petitioner), representing Product Safety Engineering. The Petitioner requests the Board to amend Title 8, California Code of Regulations, Section 4906, subsection (c) of the General Industry Safety Orders, concerning truck wheel guard requirements for container-handling, rubber-tired, gantry cranes (RTG's).

Labor Code section 142.2 permits interested persons to propose new or revised standards concerning occupational safety and health, and requires the Board to consider such proposals, and render a decision no later than six months following receipt. Further, as required by Labor Code section 147, any proposed occupational safety or health standard received by the Board from a source other than the Division must be referred to the Division for evaluation, and the Division has 60 days after receipt to submit a report on the proposal.

**SUMMARY**

The Petitioner noted that the requirement for wheel guarding "to push a person out of the way to prevent a person from being run over" was removed from subsection 4906(c) in 1995. He stated that at least one longshoreman was run over and seriously injured in 2005, an injury that he feels could have been prevented had the clause not been removed from the standard.

The Petitioner opines that guards for container-handling, rubber-tired gantry cranes can be made and have been made, which can greatly improve the likelihood of persons in the line of travel being deflected out of the way rather than being run over. In support of this, the Petitioner attached photos of at least two wheel guard configurations and a video of a third which he felt would deflect an employee on impact. He reported that in at least one case a person was protected from being run over when they bounced off and away from a crane with wheel guards constructed of heavy-duty sheet rubber skirt material. The Petitioner noted that the lower portion of some guards similar in construction was approximately 1/2-inch above ground level, thus greatly increasing the potential for deflecting rather than trapping anyone unfortunate enough to be in the line of travel of the crane's wheels.

The Petitioner notes that guards with bottom edges 6-inches or more above the ground are the norm in the industry and speculated that owners and manufacturers of RTG's appear to believe that it is not possible to provide wheel guards closer to the ground to protect persons from being run over. Alternatively, manufacturers may just believe that since subsection 4906(c) no longer

contains a requirement for wheel guards to push a person out of the way, that fixed guards 6-inches off the ground are as low as practicable.

The Petitioner observed that the Pacific Coast Marine Safety Code<sup>1</sup> contains a requirement that wheel guards push a person out of the way of the wheel. Rule 1445 states that:

“All transtainers shall be guarded with wheel fenders, bumpers, or skirt guards which shield each wheel to the front and rear extended to the lowest practicable level above ground and of sufficient height to push a person out of the way of the wheel.”

Board staff notes that although Rule 1445 of the Pacific Coast Marine Safety Code is part of the International Longshore and Warehouse Union contract with the Pacific Maritime Association, it apparently has not been effective at producing changes in wheel guarding. Furthermore, the verbiage does not address the shape of the guard; i.e., that it should act to deflect employees out of the path of travel of the wheel(s).

The Petitioner concluded by proposing that subsection 4906(c) be changed to read:

“Container-handling, rubber-tired, gantry cranes shall be guarded with wheel fenders, bumpers or skirt guards which shield each wheel to the front and rear and shall push a person out of the way and prevent a person from being crushed. Only the wheels at the far ends of each leg need be fully guarded as long as means are provided to prevent a person from walking or standing between sets of wheels, or sets of trucks. Any time the crane is operated in a manner, or in a direction, that any wheel is not guarded in a manner that the guard or guards for that wheel will push a person out of the way and prevent a person from being crushed by that wheel, a guard person shall be stationed on each side of the crane, in the direction of the crane’s travel, to warn and prevent persons in the path of the crane, or who might move into the path of the crane, from coming in contact with any part of the crane, and that such guard persons shall be in constant communication with the operator of the crane.”

#### DIVISION’S EVALUATION

The Division’s evaluation report received August 30, 2007, concurs with and supports granting Petition No. 495 submitted by Mr. Richard Grossman, PE, to amend Section 4906(c) to require effective guarding of wheels on rubber-tired gantry cranes.

A review of the rulemaking records for this section reveals that the standard was most recently modified in June of 1995 following an advisory committee convened in response to a petition from a RTG manufacturer who did not believe that the guarding requirement found in the safety order was meant to protect persons at risk of being run over by the crane, but rather to protect the tire itself from damage. The modification resulted in the removal of language from the regulatory text that specifically required that guarding be provided that would prevent persons being run over by these gantry cranes.

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<sup>1</sup> Pacific Coast Marine Safety Code, 2002 Revision, a document negotiated between the International Longshore and Warehouse Union and the Pacific Maritime Association.

The Petitioner's position in this matter was clearly uninformed by the plain language of the rule itself which included at that time a requirement that RTG wheel guards perform "...in such a manner as to push a person out of the way to prevent a person from being run over." It is unreasonable to construe such language as meaning that the guard is to protect the tire rather than persons on the ground who may be exposed to the hazard of being run over.

The Division's position is that effective guarding is needed to protect persons on the ground in proximity to RTG's against the hazard of being run over.

#### STAFF'S EVALUATION

Subsection (c) of Section 4906 was added as part of a mandated review of all administrative standards as required by AB 1111 (McCarthy), Chapter 567, Statutes of 1979. The subsection was recommended by an advisory committee convened to assist Board staff in the AB 1111-mandated review. The performance-oriented requirement for wheel guarding, recommended by the advisory committee, as adopted by the Board on May 15, 1986, read:

"Container-handling, rubber-tired, gantry cranes shall be guarded with wheel fenders, bumpers or skirt guards which shield each wheel to the front and rear extended to the lowest practicable level above ground *in such a manner as to push a person out of the way to prevent a person from being run over.*" [Italics added]

The only other petition of subsection 4906(c), Petition No. 313, submitted by Mi-Jack, one of the major manufacturers of container-handling, rubber-tired, gantry cranes, originally sought to eliminate subsection 4906(c) entirely. The Board denied Mi-Jack's petition but requested Board staff to convene an advisory committee for the purpose of clarifying which equipment is required to comply with the subsection and determine whether modification of the existing verbiage was needed to protect employees.

An advisory committee was convened June 1, 1994. Although Board staff had developed a balanced invitation list, only one labor representative actually attended (out of four invited) and a number of uninvited manufacturer and management observers attended and gave input. The committee consensus was to remove the performance-oriented clause "in such a manner as to push a person out of the way to prevent a person from being run over."

The minutes indicate that the majority of the committee was of the opinion that modification of the wheel guards to better protect employees was impractical, and Mi-Jack asserted that it is impossible to develop a guard that would deflect people out of the way 100% of the time. Moreover, they stated that container terminals are a controlled environment and employees are (or should be) trained to be aware of the hazards including the potential for being struck by RTG's.

Mi-Jack cited a study they had commissioned by Triodyne, Inc., as evidence that it is impossible to design a bumper that will deflect persons away from the path of the wheels. However, the

Division and the Petitioner are of the opinion that the Triodyne study failed to consider other design options and reduced clearances that might have effectively accomplished that purpose.

The rulemaking action was justified on the basis of industry assertions that, given the irregular terrain over which RTG's must operate and the variable weight of loads they must carry, it was impossible to construct a wheel guard sufficiently strong and with a clearance reduced sufficiently to prevent persons from being dragged under the guard if they are struck and pushed to the ground by it.

The Petitioner agrees that the Triodyne video showed that a flat wheel guard with a 6-inch gap above the pavement/ground level merely serves to push an employee down and hold them in the path of the oncoming wheel(s). However, the Petitioner has provided photographic examples of wheel guards made of heavy-duty rubber sheeting that have been reported to have successfully deflected employees out of the way of on-coming RTG's.

Petition No. 495, if granted, could effectively reverse the results of the rulemaking that resulted from Petition No. 313, and could conceivably reinstate performance verbiage requiring the wheel guard to prevent employees from being run over.

Only two accidents involving citation of subsection 4906(c) that resulted in injury or fatality have occurred in California since January 1995.

1. A fatal accident occurred in Oakland, November 2, 1992.<sup>2</sup> A lead supervisory clerk was working near a transtainer. He had just taken a bill of lading from a truck driver and was checking numbers on the containers. At the same time, the transtainer's operator, looking down through the crane's bottom window, noted that the crane's alignment over the container stack was too close to the truck parked next to the stack. He decided to move the vehicle at the same time the clerk, with his back to the approaching transtainer, stepped back from the truck and directly into the path of the approaching transtainer's right rear wheel. He was knocked-down and his foot was caught under the wheel, resulting in him being run over and fatally crushed. The accident investigation summary speculated that his death might have been prevented if proper wheel guarding had been provided. Although subsection 4906(c) was cited, the record indicates that the citation and fine were dismissed.
2. An amputation accident that occurred in the Long Beach Shipyard on May 18, 2005,<sup>3</sup> which prompted the petitioner to submit this request. The victim was a clerk who was working with a transtainer operator in picking containers from the yard to load them onto trucks that line-up in a traffic lane adjacent to stacks of containers. As the transtainer was loading a container onto a truck, the victim crossed from the outside of the transtainer in front of the wheel to find the next container to be loaded. At this point the clerk was not visible to the transtainer operator, and once the container had been loaded onto the truck, the operator backed up the transtainer onto the employee, severely crushing his lower right leg.

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<sup>2</sup> Inspection No. 111814398, Stevedoring Services of America, opened 11/2/1992.

<sup>3</sup> Inspection No. 301281614, American Presidents Line, opened 5/18/2005.

While accidents relating to subsection 4906(c) are infrequent, the consequences can be extremely serious.

Board staff also conducted a site visit to the Port of Oakland Maritime Facilities on August 7, 2007, and observed that automation is increasing in the container handling and shipping industry. All terminals have the goal of increasing automation to increase production and to reduce worker exposure to hazards on the ground. However, they are in different stages of automating.

Board staff therefore recommends that the petition be granted to the extent that an advisory committee be convened to consider modifications to subsection 4906(c) to update the standard consistent with current technology and to consider the affects of automation on worker exposures. Given the wide variety of operations and automation in marine terminals, the committee may also wish to consider providing flexibility (i.e., options for compliance) rather than a “one-size-fits-all” approach. The Petitioner should be extended an invitation to participate in the advisory committee deliberations.

Board staff’s suggested wording for consideration by the advisory committee is as follows:

“(c) Container-handling, rubber-tired, gantry cranes shall be guarded with wheel fenders, bumpers or skirt guards which shield each wheel to the front and rear. Guards shall be shaped and extended to the lowest practicable level above ground so as to act to deflect personnel away from the path of the wheel and to avoid worker entrapment under the guard and wheel.

(d) Container-handling, rubber-tired, gantry cranes shall be equipped with automatic visual and audible alarms which will activate for 5 seconds prior to the crane commencing movement in any direction

(1) In lieu of an audible alarm, administrative controls shall be established such as:

(A) A spotter or flagger in clear view of and in constant communication with the operator. The spotter shall coordinate the vehicle moving operation, or

(B) Prohibiting all foot traffic in the work area.

(2) All vehicles shall be equipped with an audible warning device which can be clearly heard from a distance of 200 feet.

### CONCLUSION AND ORDER

The Occupational Safety and Health Standards Board has considered the petition of Mr. Richard D. Grossman, P.E. (Petitioner), representing Product Safety Engineering, to make recommended changes to Section 4906, subsection (c) of the General Industry Safety Orders, concerning truck wheel guard requirements for container-handling, rubber-tired, gantry cranes. The Board has also considered the recommendations of the Division and Board staff. For reasons stated in the preceding discussion, the Petition is hereby granted to the extent that a representative advisory committee be convened.